IN THE CLAIMS

1. (Canceled)

2. (Currently amended) An etching method according to claim [[1]]3, wherein a solution, which can dissolve a layer to be etched in said second step and cannot dissolve said surface reformed layer, is used as said etchant.

3. (Currently amended) An etching method ~~according to claim 1, comprising:~~

a first step of subjecting a plastic substrate to ion implantation treatment, to reform a surface of said plastic substrate, thereby forming a surface reformed layer; and

a second step of subjecting said plastic substrate to wet etching treatment using a specific etchant by determining an end point of the wet etching treatment with the use of said surface reformed layer, wherein a solution, which has a high selection ratio of etching of a layer to be etched is said second step at least to etching of said surface reformed layer, is used as said etchant.

4. (Currently amended) An etching method according to claim [[1]]3, wherein limonene is used as said etchant.

5. (Currently amended) An etching method according to claim [[1]]3, wherein said second step is carried out in an ultrasonic environment.

6. (Currently amended) An etching method according to claim [[1]]3, further comprising a third step of forming a specific thin film on said surface reformed layer, said third step being inserted between said first step and said second step.

7. (Original) An etching method comprising:

a first step of subjecting both surfaces of a plastic substrate to ion implantation treatment, to reform both the surfaces of said plastic substrate, thereby forming a surface reformed layer on both the surfaces of said plastic substrate;

a second step of placing a mask having an opening on said surface reformed layer, and subjecting said surface reformed layer to dry etching treatment by using said mask, thereby forming an opening in said surface reformed layer; and

a third step of subjecting, after removal of said mask, said plastic substrate to wet etching treatment using a specific etchant with said opening formed in said surface reformed layer taken as a start point of etching and a portion, opposed to said opening, of said surface reformed layer taken as an end point of etching, thereby forming a fine structure in said plastic substrate.

8. (Original) An etching method according to claim 7, wherein said first step is carried out by generating a plasma containing implantation ions in a vacuum chamber, and attracting said plasma to said plastic substrate placed in said vacuum chamber, thereby implanting the implantation ions in said plastic substrate.

9. (Original) An etching method according to claim 7, wherein said fine structure is a recess having a uniform inner diameter in the depth direction.

10. (Original) An etching method according to claim 7, wherein a solution, which has a high selection ratio of etching of a portion of said plastic substrate to be etched in said third sep at least to etching of said surface reformed layer, is used as said etchant.

11. (Original) An etching method according to claim 7, wherein limonene is used as said etchant.

12. (Original) An etching method according to claim 7, wherein said third step is carried out in an ultrasonic environment.

13. (Original) An etching method according to claim 7, further comprising a fourth step of forming a specific thin film on said surface reformed layer between said first step and said second step, wherein in said second step, an opening is formed in said surface reformed layer and said thin film.

14. (Original) An etching method according to claim 13, wherein said specific thin film is a carbon thin film.

15. (Original) An etching method comprising:

a first step of subjecting only one surface of a plastic substrate to ion implantation treatment, to reform the surface of said plastic substrate, thereby forming a surface reformed layer on the surface of said plastic substrate; and

a second step of placing a mask having an opening on an exposed surface, on which said surface reformed layer is not formed, of said plastic substrate, and subjecting said plastic substrate to wet etching treatment using specific etchant with said opening of said mask taken as a start point of etching and a portion, opposed to said opening, of said surface reformed layer taken as an end point of etching, thereby forming a fine structure in said plastic substrate.

16. (Original) An etching method according to claim 15, wherein said first step is carried out by generating a plasma containing implantation ions in a vacuum chamber, and attracting said plasma to said plastic substrate placed in said vacuum chamber, thereby implanting the implantation ions in said plastic substrate.

17. (Original) An etching method according to claim 15, wherein said fine structure is a recess having a circular-arc etching plane.

18. (Original) An etching method according to claim 15, wherein a solution, which has a high selection ratio of etching of a portion of said plastic substrate to be etched in said second step at least to etching of said surface reformed layer, is used as said etchant.

19. (Original) An etching method according to claim 15, wherein limonene is used as said etchant.

20. (Original) An etching method according to claim 15, wherein said second step is carried out in an ultrasonic environment.

21. (Currently amended) An etching method comprising:

a first step of subjecting both surfaces of a plastic substrate to ion implantation treatment, to reform both the surfaces of said plastic substrate, thereby forming a surface reformed layer on both the surfaces of said plastic substrate;

a second step of forming a ~~sacrifice~~sacrificial layer at a nearly central portion on said surface reformed layer;

a third step of forming a thin film so as to cover said plastic substrate on which said ~~sacrifice~~sacrificial layer has been formed;

a fourth step of placing a mask having an opening on said thin film, and subjecting said thin film to dry etching treatment using said mask so as to selectively remove said thin film until said ~~sacrifice~~sacrificial layer is exposed, thereby forming an opening in said thin film; and

a fifth step of subjecting, after removal of said mask, said ~~sacrifice~~sacrificial layer to wet etching treatment using a specific etchant with said opening formed in said thin film taken as a start point of etching and said surface reformed layer taken as an end point of etching, to selectively dissolve only said ~~sacrifice~~sacrificial layer, thereby forming a fine structure on said plastic substrate.

22. (Original) An etching method according to claim 21, wherein said first step is carried out by generating a plasma containing implantation ions in a vacuum chamber, and attracting said plasma to said plastic substrate placed in said vacuum chamber, thereby implanting the implantation ions in said plastic substrate.

23. (Original) An etching method according to claim 21, wherein said fine structure is a beam structure having a beam portion.

24. (Currently amended) An etching method according to claim 21, wherein a solution, which can dissolve said ~~sacrifice~~sacrificial layer but cannot dissolve said surface reformed layer and said thin film, is used as said etchant.

25. (Currently amended) An etching method according to claim 21, wherein a solution, which has a high selection ratio of etching of said ~~sacrifice~~sacrificial layer to etching of said surface reformed layer and said thin film, is used as said etchant.

26. (Currently amended) An etching method according to claim 21, wherein said thin film is a carbon thin film, said ~~sacrifice~~sacrificial layer is a copper film, and said etchant is a ferric chloride solution.

27. (Original) An etching method according to claim 21, wherein said fifth step is carried out in an ultrasonic environment.